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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,559	10/06/2003	Alexander T. Garthwaite	03226/936001; P8316	3291
32615	7590	02/07/2007	EXAMINER	
OSHA LIANG L.L.P./SUN			RUTZ, JARED IAN	
1221 MCKINNEY, SUITE 2800			ART UNIT	
HOUSTON, TX 77010			PAPER NUMBER	
			2187	
SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE		
3 MONTHS	02/07/2007	PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/679,559	GARTHWAITE, ALEXANDER T.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jared I. Rutz	2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 22-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 22-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. Claims 1-14 and 22-28 as amended on 11/7/2006 are pending in the instant application. Applicant's arguments filed 11/7/2006 have been carefully and fully considered, and are found persuasive as discussed below. However, this Office action contains a new grounds of rejection necessitated by amendment of the claims. Accordingly, this Office action is made **FINAL**.

#### ***Specification***

2. The amendments to the specification, abstract, and the title are accepted by the Examiner. Accordingly, the objections presented in the previous Office action are withdrawn.

#### ***Drawings***

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "*moving on to another group of memory sections distant from the next scheduled group*" as recited in claims 1, 8, and 22 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

4. The drawings are further objected to because figures 18 and 19 contain handwritten changes.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate

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prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. **Claims 1-14 and 22-28** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

7. **Claims 1, 8, and 22** have been amended to recite the limitation "*wherein updating the card table indicators or remembered sets of corresponding objects comprises storing, in the card table indicators or remembered sets, at least one location of referencing objects that reference the corresponding objects*". In Applicant's remarks filed 11/7/2006 at lines 9-11 of page 11, Applicant states "*Support for this amendment may be found, for example, in Figures 12A-12J and the corresponding text in the specification.*" Figures 12A-12J discuss evacuating adding cars to trains, and moving objects into the cars of trains. These steps are disclosed to require updating references of objects which reference the relocated objects, which is necessary as the locations of the objects have been changed. Although the cited section teaches updating the location of references in objects which reference a moved object, it does not teach storing a reference of at least one location of referencing objects that reference the corresponding objects when updating the card table indicators or remembered sets of objects corresponding to a dirtied memory section. The cited section of the specification also does not show that the objects which have their references updated correspond to a dirty section. Additionally, the cited section makes no mention of storing a location of referencing objects in the card table indicators, as recited in the claims. There is no recitation in the claims of moving or relocating objects. Applicant's claimed invention is directed to tracking and summarizing modified references in a garbage collector. Accordingly, the Examiner is not aware of any teaching in the specification that shows "*updating the card table indicators or remembered sets of corresponding objects comprises storing, in the card table indicators or remembered*

*sets, at least one location of referencing objects that reference the corresponding objects” as recited in claims 1, 8, and 22.*

8. **Claims 2-7, 9-14, and 23-28** depend from claims 1, 8, and 22 respectively and are rejected for the same reasons as claims 1, 8, and 22.

### ***Response to Arguments***

9. In the first paragraph beginning on page 13 of the response filed 11/7/2006, applicant states:

a. *“As described above, manipulating the color scheme that indicates whether an object is referenced by another object is completely distinct from actually storing the location of the object that references an object in a dirtied area of memory”*

10. This argument is found persuasive. Accordingly, the rejection of claims 1-4, 6, 8-11, 13, 22-25, and 27 under 35 USC 102(e) and 5, 7, 12, 14, 26, and 28 under 35 USC 103(a) is withdrawn.

11. In the second paragraph beginning on page 13 of the response filed 11/7/2006, applicant states:

b. *“Further, Kolodner fails to disclose that card table indicators are preserved as having just been interrogated, after the second time that an atomical interrogation is performed to search for dirty indicators. Preserving indicators as ‘just interrogated’ allows the garbage collector to maintain the summarization for*

*card table entries/remembered sets while still recording newly dirtied bytes (objects). The garbage collector can then process these recorded newly dirtied objects at a later collection interval (see Specification, page 36). Kolodner fails to disclose anything related to marking a newly dirtied object as 'just interrogated' after an interrogation has been performed once already for that particular memory section."*

12. The Examiner respectfully notes that this argument is not commiserate with the language and scope of claims 1, 8, and 22. Claims 1, 8, and 22 recite the limitation "*preserving the indicators as just interrogated*". Given broadest reasonable interpretation, this limitation merely requires that the indicators are left in the state they were in when they interrogated, which is different than marking the indicators "just interrogated" as argued by Applicant.

### **Conclusion**

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jared I. Rutz whose telephone number is (571) 272-5535. The examiner can normally be reached on M-F 8:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jared I Rutz  
Examiner  
Art Unit 2187

jir  
*[Handwritten signature]*

*[Handwritten signature]*  
Brian R. Peugh  
Primary Examiner  
2/3/07